Comments on Draft Pond Water Management Alternatives
Colorado Department of Public Health and Environment
July 12, 1994

These comments apply primarily to near term alternatives, and reflect differences of opinion among CDH staff in some cases. The alternatives provided by DOE appear to be limited in approach and scope, reflecting a reluctance to truly consider alternatives other than that previously chosen. Previous suggestions by CDH staff have not been addressed, and are repeated below.

General Comments

Purpose: DOE's underlying basis for needing to continue to manage the ponds has not been defined. They have to decide which of two reasons, I) protecting human health or II) sustaining ecological resources, is the primary objective. We cannot shape a management plan without knowing what we are managing for.

Proposals: There are many good proposals in the document, but they are not integrated sensibly. Some limited suggestions for combined recommendations are included at the end of this memo.

Treatment: DOE has not figured out what would happen if sample results for any system came out above standards. Our comments on the draft IM/IRA supported a consolidated treatment facility at A4, including metals and rads capability, providing one last fail safe capability.

Interior Ponds: Do not dewater and revegetate the interior ponds. This buys nothing over the current configuration and may increase worker/public exposure. Nothing should be done to the interior ponds until a remedial decision is reached under OU6. There is still a chance that the interior ponds would receive a spill, rendering any temporary action useless.

On the other hand, the interior ponds should not be used for routine spill control. DOE philosophy in general is to keep them as a backup system. That may be acceptable, provided other means (tankage) is used as the PRIMARY spill control mechanism. DOE seems to be missing the link between tankage and the interior ponds. Just because the Dispute Resolution Committee pawned implementation of tankage to the Industrial Area IM/IRA does not excuse this IM/IRA from complying with the reason we needed the tanks in the first place.

Water Balance: Flows into the pond systems are not yet quantified. The 50/50/50 MG generalization is not workable for decision making. There are no volumes attached to discharges such as footing drains, runoff, exfiltration. As a first step in planning for pond management DOE should have compiled and provided detailed information on the quality and quantity of each of the sources to each pond and evaluated whether any of those sources could have been prevented, reduced, contained, etc.

DOE needs to evaluate "wet" and "dry" periods; the excess water occurs during a short season (April-June?). At other times, the system can be managed in a batch mode. The excess water needs to be quantified so that a method of disposal can be determined.

Operating Parameters: DOE failed to investigate changing their operating constraints of 50% capacity, 1 ft/day drawdown and failed to look at ways to reduce the 35+ day batch discharge cycle. They cannot seem to pin down (or justify) the nuts and bolts of operational constraints. The capacity limits on the ponds keeps bouncing around between 50 and 65%. Does DOE really know what the maximum is? What about pelzometric levels?

Agenda page: Please forward copies of the responsiveness summary and the draft schedule for submittal of "draft final Pond Water Management IM/IRA decision document". What is the purpose of the "Biological Assessment for Pond Water IM/IRA" listed as an agenda item?

Analyses: With respect to needing to analyze for "212 water quality parameters ... per pond prior to release": CDH needs to be able to take a representative sample of the impounded water prior to release. We do not require DOE to sample, or to sample each pond.

Considerations: They need to define how "considerations" such as the Migratory Bird Treaty Act and the Endangered Species Act have anything to do with decisions on how to manage water. The "Considerations" are not supported or quantified. DOE needs to define what they mean by "historic water quality data" and "emergency releases of water". If DOE needs to perform a water rights assessment for a particular option, why hasn't at least a first cut at an assessment been done? DOE has not presented any details on how and at what volumes the cited Acts regulate pool volume fluctuation or detention of water.

Costs: At the level of detail provided, costs do not appear to vary enough to justify carrying them as a consideration. It is unclear whether cost estimates are valid enough to justify comment. Specific comments on costs are therefore reserved.

Specific Comments

Option 1.1: Batch Discharge with Increased Dam Monitoring

- This is no different from current operations other than having a person monitor the dams more often.
- What will be accomplished for the $900,000 for dam safety? Is this in addition to work already being performed as recommended by the Corps?

Option 1.2: Spray Evaporation/Irrigation

- The option on interior ponds, however, is probably best (except spray evaporating excess water). This is an example of a good alternative hidden in a bad one.
- We have gone on the record as not being in favor of spray evaporation. Many of our concerns are listed in this section.
- No comment other than this may be appropriate in combination with another alternative. (Spray evaporation, in the case of the Landfill Pond, shows 90% of the water returning to the pond. Thus, it would seem that evaporation will not effectively reduce water volumes. Irrigation may be OK. According to the Zero Discharge Study, 1 MG of potable water is used for lawn watering in the summer. Maybe a source other than potable water could be used for this, as well as other, purposes. Has DOE evaluated alternatives that use water but do not create wetlands?
- Does DOE have access to raw water that could be used to replace any consumed?
- Presumably DOE would not use contaminated water for this purpose so how could "additional IHSS's" be created?
- Any return flow would need to be prevented or managed to meet Seg. 4 standards if it entered that Segment.

Option 1.3: Direct Discharge of STP Effluent to Segment 4

- This may be one of the best alternatives. Allowing this virtually eliminates all the other sticking points, which are primarily related to water volumes. This would free up pond capacity for almost exclusively storm water runoff. It would reduce the inflow enough so that they could easily manage a batch isolation system with the water that does reach the terminal ponds.

- The bad part is that the new NPDES permit would have to be in place. This may not happen in our lifetime.

- Because the water would be regulated once at the STP under NPDES, it not only seems unreasonable but unnecessary to expect DOE to resample the same water once it gets to A4. I think we could ask for, and probably get, whatever tighter controls we think are necessary at the STP.

- No real-time analytical equipment exists for rads. The only risk associated with this option is an unknown release of a radionuclide. Do the benefits outweigh the risks?

- What would a release of rads do to the STP and how likely is it to get through? DOE should develop removal efficiencies for various parameters, including rads.

- The water quality analyses estimate ($500K) is the same as the previous alternatives. This should increase with tighter monitoring of the STP effluent. Also, what is the $800K allotted to dam safety going towards?

- RF would first need to demonstrate to the State's satisfaction that there are adequate controls within the entire system to assure that spills could not enter the WWTP influent. One mechanism which would provide some assurance is through the current Drain ID Study which is currently underway. However, this study is not likely to be completed until 1998 (per DOE comments on the draft NPDES permit).

- Additionally, DOE would need to demonstrate to the State that *deliberate* contributions to the STP are all identified, quantified and evaluated against STP removal efficiencies and effluent limitations. This appears unlikely. As an example, DOE provided notification in June, 1994 to EPA pursuant to their current NPDES permit, that 2400 gal/wk of wastewater from the decon pad would be entering the STP collection system. The only pretreatment standards applied by DOE are for gross alpha, gross beta and pH. The alpha standard set by DOE is 40 pCi/l. No specific rads are to be tested prior to discharge to the STP. A worst case example would be 2400 gallons released in one day, with 40 pCi/l Pu. Assuming 90% removal in the STP, and assuming zero background Pu entering the STP, the effluent Pu would exceed the proposed permit limit of 0.05 pCi/l. Yet DOE is satisfied with simply measuring alpha, which has yet to be correlated with plutonium concentrations. This would show that direct STP release is not reliable. It would be a vulnerable system. There are examples of other unknowns with respect to STP contributions: Per DOE comments to the draft NPDES permit, the NCPP involves potential discharge to the STP. Yet no quantification of this discharge has been presented.

- Exactly where would the STP be discharged into Seg.4? Above or below McKay bypass return flow?

- Has DOE evaluated methods of maintaining flows in Walnut Creek by other options or combinations of options?

Option 1.4: Continuous Use of Current Treatment System at Pond A4

- System must be upgraded for metals and rads before we consider this a serious option. Existing treatment has not been shown to effectively remove low level rads.

- Waste generation from existing system has been estimated at 120,000 #/year of spent GAC, per draft SWMP. There has been a problem in the past with disposing of this waste.

- Cold weather operations present problems.

- This option, provided additional treatment capability is added for metals, rads, etc., should be evaluated in combination with other options. Treatment at A4 should not be considered a viable long term option, as waters in A4 and above are waters of the nation and state and should meet water quality criteria.

Option 1.5: Flow-through Discharges with Real-time Monitoring

- This section lacks an action plan should discharges need to be terminated for any reason.
- Realtime alpha monitoring does not necessarily detect plutonium exceedances above 0.05 pCi/l; Could a system be developed to correlate Pu with turbidity or particle size?
- This option does not provide for representative sampling and evaluation before the water is released from DOE control. This is not possible as a short-term option.
- A flow-through system seems premature until Broomfield's new water supply is on line and with the many unknowns associated with upcoming D&D.

Ideas for Other Alternatives

A. Pending the approval and implementation of the NPDES permit at the STP, increase the controls and allow its effluent to be discharged directly, bypassing the ponds.

B. Maintain the interior ponds at 10 to 25% volume pending the OU6 ROD. Continued use of interior ponds for spill control is unacceptable. Routine spills must be directed to the new tankage. Interior ponds can remain available as an emergency backup.

C. Beef up the "Terminal Treatment Facility" at A4 to include metals and rads. If the remaining waters in the pond system are to be batched, this provides a contingency if they exceed standards. If waters are to be continuous flow, they could pass through the system continuously prior to release into Segment 4.

D. No spray evaporation. Segment 5 water can be transferred downstream and treated.

E. Could we see a schedule (time and cost) for reinforcing the existing dams? The USACE recommended flattening and buttressing the upstream slopes for A4 and C2 and flattening and buttressing the downstream slopes for all three terminal dams. Does this action allow higher water retention?

At what percent capacity would the dams need to be operated in order to batch operate year round? How close to 50% is this?

F. The hydrologic imbalance occurs roughly from March - June of each year. During this time, there is excess water which prevents operating in a strict batch mode. During this season, the volume of water transferred from B5 to A4 and from A3 to A4 can readily be quantified. Why not sample the water *as it is being transferred*, say on days 1 and 3 of the transfer. The lab turn around time of 18 days would get the results back on day 19 (for sample 1) and day 21 (for sample 2). Calculate the expected concentrations using flow volumes actually transferred into A4. If final calculated concentrations are OK, begin release from A4 on day 22. This will lessen the days in the discharge cycle. The actual pre-discharge sample would still be collected on day 7 or 10, but would not be needed for authorizing a release. It would serve basically as a confirmatory sample. The ongoing daily? STP data would also be used to confirm the results. This approach would only be used during the wet season where the need can be documented.

Concurrent with using this short-term approach, DOE would need to look at their discharge criteria (50%, one foot/day, etc) to see how valid they are for situations where the water is held for <30 days. Also, once the new piezometers are installed, these criteria need to be evaluated against the response shown by the new piezometers.

G. There are several measures scoped out in the Zero Discharge Study whereby the volume of water to the ponds could be reduced and/or some of the wastewater could be reused. Are any of these being investigated?

H. Use of the ponds as a system to perform batch releases, perhaps alternating batch releases between the larger ponds or simultaneously batching/releasing from 2 ponds while isolating STP and stormwater in another pond or ponds; Has DOE evaluated managing these releases on a seasonal basis?

I. Use of other storage (tanks, ponds) for the STP effluent and batch releases.

J. Batch until high levels force release, then treat and release if data not yet available.

K. Combinations of the listed short-term and long-term options with a phase-in of the long term.

L. These are not all of the options DOE should have considered. The process and/or the bias to a flow-through system has apparently restrained creativity.